

REMARKS

Claims 1-3, 5-12, 14-19 and 36-43 are pending in the subject application. Claims 6-9, 14-19, 42 and 43 have been indicated to claim allowable subject matter.

The claims have been amended to delete obvious errors in the claims. To further limit the claims from which they depend, Claims 9 and 15 have been amended to delete phrases referencing "zinc or vanadium". Claim 42 has been amended to change "of" to "or".

Claim 36 has been amended to make it clear that it is the cracking catalyst rather than the "equilibrium catalyst" that is produced by introducing vanadium on the catalyst and calcining the vanadium-containing catalyst composition, and thereafter using the calcined catalyst to reduce the sulfur content of the liquid cracking products. It is believed that neither the Beck et al. nor Kluger et al. teaches adding vanadium to a catalyst, calcining the vanadium-containing catalyst and thereafter using the calcined catalyst to catalytically crack a sulfur-containing petroleum feed to produce liquid cracked products having a reduced sulfur content.

DOUBLE PATENTING

Claims 1, 2, 5, 10-12 and 14 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-3, 8-10 and 12 of co-pending Application No. 09/221,539 in view of Beck et al. (US Patent No. 4,588,702). This rejection is traversed.

Claims 1, 2, 5, 10-12 and 14 of the subject application recites a method of reducing the sulfur content of a liquid catalytically cracked petroleum fraction, said method comprising catalytically cracking a sulfur-containing petroleum feed in the presence of an equilibrium cracking catalyst and a product sulfur reduction

catalyst. In accordance with the claims of the instant application, the product sulfur reduction catalyst comprises a porous molecular sieve requiring a vanadium metal component in an oxidation state greater than zero located within the piece of the molecular sieve.

Claims 1-3, 8-10 and 12 of co-pending Application No. 09/221,539 recites a method of reducing the sulfur content of a liquid catalytically cracked petroleum fraction, wherein the method comprises catalytically cracking a sulfur-containing petroleum feed in the presence of an equilibrium cracking catalyst and a product sulfur reduction catalyst. In accordance with the claims of co-pending Application No. 09/221,539, the product sulfur reduction catalyst **requires** a porous molecular sieve having a **vanadium metal** in an oxidation state greater than zero **in combination with a rare-earth** within the pores of the molecular sieve to reduce the sulfur content of a liquid catalytically cracked product.

The claims of the instant application are silent with respect to the use of a rare-earth in a product sulfur reduction catalyst to reduce the sulfur content of liquid catalytically cracked products. Consequently, claims 1-3, 8-10 and 12 of co-pending Application No. 09/221,539 fails to render obvious Applicants' invention as presently claimed.

Confusingly, the Examiner has relied upon the Beck et al. reference to show that rare-earth components are known promoters in a catalytic cracking process. At best, the Beck et al. reference teaches **partially exchanging** a zeolite-containing cracking catalyst with a rare-earth to reduce the deleterious effect of vanadium poisoning on a zeolite FCC catalyst. There is no teaching in Beck that the presence or absence of a rare-earth component would have any effect on the sulfur content of liquid cracked products. Further, since the claims of the present invention do not recite the presence of a rare-earth, it is clear that neither Beck et al. nor the claims of co-pending Application No. 09/221,539 renders obvious Applicant's invention as now claimed.

U.S. Patent Application No. 09/144,607
Response Dated 10/09/03
Non-Final Office Action Mailed 6/30/03

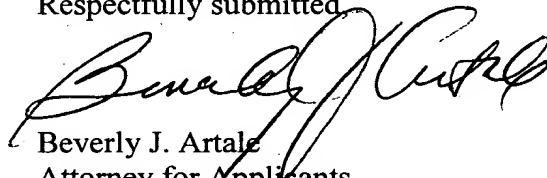
Consequently, for reasons as stated hereinabove, it is believed that Applicants' invention is unobvious over the claims of co-pending Application No. 09/221,539 alone or in view of Beck et al. Accordingly, this rejection is improper and should now be withdrawn.

Claims 1-3, 5 and 10-12 stand provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-4 and 8-10 of co-pending Application 09/221,540 in view of Beck et al. (4,588,702). This rejection is traversed.

Application No. 09/221,540 has not been abandoned. Accordingly, this rejection is moot and should now be withdrawn.

Consequently, for reasons as indicated hereinabove, Applicants' invention as now claimed is patentable over the prior art of record. Allowance of claims 1-3, 5-12, 14-19 and 36-43 is respectfully requested.

Respectfully submitted,



Beverly J. Artale
Attorney for Applicants
Reg. No. 32,366

Tel: (410) 531-4769
W. R. Grace & Co.-Conn.
7500 Grace Drive
Columbia, Maryland 21044